Claims

1. A method for determining a specification guardband comprising the steps of:

creating a set of distribution models representative of variables that affect said specification;

analyzing the set of models with a statistical tool that can work with the distribution models; and

selecting a guardband for said specification based on the statistical analysis and a tolerance target for the said specification under analysis.

2. The method of claim 1 where one of the variables is the system on which the product is used.

3. The method of claim 2 where one of the variables is the system to tester offset.

4. The method of claim 1 where one of the variables is the test system which the guardband is used.

5. The method of claim 1 where the statistical tool uses a Monte Carlo analysis.

6. The method of claim 1 where the product specification is maximum frequency.

7. The method of claim 1 where a sample chosen for creating the models is at least 10.

8. The method of claim 1 where the tolerance target is a quality target.

9. The method of claim 1 where the tolerance target is a revenue target.

10. The method of claim 1 where one of the set of models is a reliability wearout model.

11. The method of claim 1 where student-t and chi-squared distribution models are used.

12. The method of claim 2 where the step of creating a set of models includes the additional steps of:

setting up the system environment;

modeling system variables distributions during normal operation;

setting initial system variables;

booting the system at increasing frequencies until the system hangs;

running system applications at the highest frequency at which the system functions and record such frequency; and

changing the initial system variables and performing on the new variables the same steps applied to the initial system variables.

13. The method of claim 3 where the creating a set of models includes the additional steps of:

inputting tester to system correlation data;

calculating system to tester offset for a set of samples;

choosing an appropriate distribution model for the tester to system offset and

calculating a tester to system mean and sigma based on the sample size.

14. The method of claim 4 where the step of creating a set of models includes the additional steps of:

characterizing tester system electrical and mechanical parameters that affect specifications under analysis;

characterizing tester system to tester system offset;

choosing an appropriate distribution model for said tester system parameters; and

tester system offset.

15. The method of claim 12 where system variable distributions are power supply voltage and operating temperature.

16. The method of claim 12 where the method of calculating tester to system mean and sigma is applied to a different speed sort.

17. The method of claim 13 where the method of calculating tester to system mean and sigma is applied to a different system.

18. The method of claim 14 where tester system electrical parameters are tester timing accuracy, clock edge placement accuracy and tester power supply distributions.

19. The method of claim 14 where tester system mechanical parameters are device under test interface board, tester temperature and tester handler distributions.

20. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for determining a tester guardband, the method comprising the steps of:

creating a set of distribution models representative of environmental variables for the tester and the product under test, the set of models based on a product parameter variables that affect said specification;

analyzing the set of models with a statistical tool that can work with the distribution models; and

selecting a guardband for the tester said specification based on the statistical analysis and a tolerance target for the product under test said specification under analysis.

21. The program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for determining a tester guardband, of claim 20 wherein the program of instruction provides that one of the variables is the system on which the product is used.

22. The program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for determining a tester guardband, of claim 20 wherein the program of instruction provides that one of the variables the system to tester offset.

23. The program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for determining a tester guardband, of claim 20 wherein the program of instruction provides that one of the variables is test system where the guardband is used.

24. The program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for determining a tester guardband, of claim 20 wherein the program of instruction provides that one of the set of models is a reliability wearout model.

25. The program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for determining a tester guardband, of claim 20 wherein the program of instruction includes statistical program tool that uses a Monte Carlo analysis.

26. The program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for determining a tester guardband, of claim 20 wherein the program of instruction provides that the models are student-t and chi-squared distribution models

27.. A computer configured for determining a tester guardband, the computer comprising:

an application interface for inputting various environmental models into the computer the models comprising a tester model and system model;

a memory that contains a statistical program capable of doing statistical distribution analysis;

an application interface for inputting tolerance data;

an execution unit that receives the statistical program and environmental models and processes the guardbands based on the tolerance data; and

an I/O device for outputting the guardband data ..